

# **Restoring Academic Confidence in Digital Natives**

An Honors Thesis (ICOM 495)

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## **Abstract**

The purpose of this project is to evaluate academic research that discusses how to educate digital natives and propose solutions to better help millennial students. The project consists of an academic research paper and a project report detailing the design process of developing a web-application that served Ball State students as a means of educational collaboration. While it is often assumed millennials instinctively know how to use technology, there is no scientific evidence that suggests that students can easily filter information online. In fact, 84 percent of undergraduates reported the most difficult step in course-related research process was getting started(Head & Eisenber, 2010). The paper and following report discuss my findings and recommendations.

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Lastly, I would like to thank all of the users who participated in user testing to help me create an end product that solves a real problem.

## **THESIS**

The digital learning environment and tools established by professors and institutions dictate a student's ability to confidently filter information in the digital space.

## **INTRODUCTION**

The term digital native has been coined to define millennials (Presnky, 1991). Even though millennials have grown up with technology, the assumption that they are avid computer users that can easily filter information online is false. Eighty-four percent of undergraduates reported the most difficult step in the course-related research process was getting started (Head & Eisenber, 2010). In addition, 49 percent of the sample asked instructors for assistance in assessing the quality of sources for course work. This demonstrates the clear disconnect between millennials and their ability to confidently find scholarly information online.

As thought leaders call for change in the way educators teach to the needs of millennial students, more focus is being spent on addressing their generational differences than providing them the skills they need to succeed. This has also fueled debate on how to approach the problem amongst thought leaders and educators. The lack of focus in education, in combination with the millennial norms of having constant access to information, quick and efficient means of communication and the security blanket of an online identity, have fueled the diminishing confidence of today's students. The backlash goes far beyond confidence in the classroom, as students also have a negative perception of their self-worth when entering the workplace.

Education is also transitioning in its use of digital learning environments. Currently, the main functionality of these tools allows students to receive course notifications, find links to readings or videos and submit classwork. While discussion boards are present, they are counterintuitive for fostering collaborative learning as well as efficient communication. This results in students leaving the digital learning environment in favor of social media websites to communicate. As this happens, students lose focus as information competes for their attention. Students need to have purpose for going online in order to be efficient exploratory learners.

Major factors in the success of a digital learning environment are professors and the social tools provided. In this paper I argue that digital learning environment and tools established by professors and institutions dictate a student's ability to confidently filter information in the digital space.



The paper is comprised of a literature review that examines the misconception of digital natives, millennial behaviors, perceived confidence in education, and the current state of online learning environments. Following the review I support my thesis with two points of argument. A limitation of this paper is the data spans over a decade. As technology rapidly changes, education is approached differently. The ultimate goal of this paper is to provide recommendations for thought leaders and educators to better help the millennial student. It is my hope that educators can adopt a learner-centered pedagogy while interacting with students using social tools to create an efficient collaborative learning environment. While this may not translate to better grades, students will have higher levels of satisfaction when learning and ultimately regain confidence in their work.

## **LITERATURE REVIEW**

### What is a digital native? and who are digital immigrants?

In 2001, Marc Prensky, an internationally acclaimed thought leader, speaker, writer, consultant, and game designer in the critical areas of education and learning, claimed today's students are no longer the people our education system was designed to teach (2001). With this statement, he originated two unique names that would influence the learning landscape to this day. First he declared the millennial generation as digital natives: the first generation to grow up with computers, video games, digital music players, cell phones, and the mass array of online tools in the new digital age. This leaves digital immigrants as those who were born outside of the digital world and adopt the new technology. The digital immigrant is socialized differently than a digital native and to some degree will have its foot in the past (Prensky, 2001). Ultimately Prensky argues that teachers as digital immigrants need to change their teaching pedagogy in order to meet the needs of students today.

In analyzed data from a 2007 Oxford Survey Internet survey, university staff Helsper and Eynon tested Prensky's philosophy. The survey found that there is not statistically significant proof that millennials are better versed in their use of technology. While most millennials are surrounded by it more and use it for different purposes, there is no drop in information and communication technology (ICT) activities until age 55 and later (2007). The researchers also examined how Web 2.0 has created an entirely new breed of Prensky's digital native. The stigma that still stands to this day leads to teachers and students engaging in different digital learning environments and Web 2.0 tools the does not benefit the student or the teacher, thus hindering the education process. An example of the negative impact on learning is communication.

Academic and business researches have found that communication and communication strategies are essential for a manager yet there is a serious deficiency in oral, written, and interpersonal communication skills among millennials today (Hartman & McCambridge, 2011). This identifies the issue of teaching students who interact not only with each other but also with technology differently. This suggests that education cannot remain the same in its teaching of students, but it must also not assume all students behave and interact in the same way.

Richard Sweeney, a university librarian at the New Jersey Institute of Technology, conducted 35 millennial focus groups in front of live audiences to confirm research conducted by EDUCAUSE, PEW, and OCLC. While focus groups are not necessarily statistically valid, his results are not surprising. The millennial generation has no tolerance for delays, is result oriented, and learn through personal exploration (Sweeney, 2006). These behaviors can be traced to the culture that surrounds the generation. Millennials are accustomed to having constant access to information, quick and efficient means of communication all while having the security blanket of an online identity. It is near impossible to imagine one's lifestyle today now that these cultural norms have quickly become embedded into our daily routines. While this culture has had an impact on older generations, it does not forego their previous influences. This is reflected in their use of Web 2.0 technology in contrast to millennials.

Older generations are more likely than younger generations to search for certain types of information online (Zickuhr, 2010). These activities range from visiting government websites to getting financial information. In addition, millennials are least likely to communicate through the use of e-mail, an action that is the predominant form of online communication for older generations. This demonstrates the generation gap in how technology is used, but also proves there is no lack of technical knowledge when it comes to using technology offered by Web 2.0. The culture of society has a clear impact on how technology is used; however, it does not change the fundamentals that today's students need to know.

Millennials' core values are the same as their forefathers. Their unsophisticated consumption of information can be traced to the lack of direction in today's educational landscape. While the learning environment may be different, its core principles have remained the same. Educators need to focus on teaching students the skills they need to succeed rather than focusing on the differences between the generations (Becker, 2009). Without setting a standard, students will continue to lose confidence in the information they find, and will struggle in the professional workplace.

#### Confidence with technology requires repetition and availability

To test confidence in millennial students many researches conducted surveys that included likert scale questions, interviews, and discussion groups. These surveys were not only given to students but also professors and faculty. The resounding tone of each study conducted is the severe lack of confidence among the so-called digital native generation. Eighty-four percent of undergraduates reported the most difficult step in the course-related research process was getting started (Head & Eisenber, 2010). In addition, 49 percent of the sample asked instructors for assistance in assessing the quality of sources for course work. This demonstrates the clear disconnect between millennials and their ability to confidently find scholarly information online. Students also were very unlikely to use many Web 2.0 technologies because they were unaware of their existence.

Researchers at the Pew Research Internet Project surveyed more than 2,000 middle and high school teachers and conducted focus groups to evaluate today's digital environment and how it has impacted research and writing habits. The study found that the three most common areas students are very likely to conduct research are search engines (94 percent) Wikipedia (75 percent), and social media (52 percent). The study also finds that while 77 percent of teachers believe technologies have a positive impact 60 percent strongly agree that it is harder for students to find credible information (Purcell et al., 2012). While information is easier to find, it is also easier to be misled and poor outcomes are the end result. Students are relying on these information gateways because it is quick, easy to access, and is used on a daily basis. This is why there is a false sense of confidence in comparison to a library's research database.

In an introductory computing class, researchers at the Unitec Institute of Technology tested 273 students to determine the student's self-perception of computer knowledge and how it contrasts with their actual knowledge. The study found that 50 percent of students believed that they were getting by with their computer knowledge. Only 32 percent said they were fairly competent and 10 percent at quite competent. When using Microsoft Word and Internet software students fared well regardless of age. When students used Access and Excel, applications not commonly used among the students tested, the students struggled to understand the technology (Sheery & Fielden, 2005). This reveals that students are adept at the technology they surround themselves with, but not necessarily technology they won't often use. Without repetition and daily use of the technology, it is easy for the student to lose confidence and completely ignore the available tools of Web 2.0. This negative trend goes far beyond middle and high schools.

More and more millennial students are attending graduate school; however, the reasoning is more than simply wanting to further their education. In a Master degree study conducted by Courtney Smith of Wright State University, Smith found students felt that they needed more academic support both before and during graduate school (2010). This finding reveals that students lack confidence to not only continue their education, but also to enter the workforce. Graduate school is now serving students to help build their self-confidence so they can enter the workforce without the fear of being unprepared. Even at the graduate level, students seem to lack confidence in what is considered high-level work. Ultimately, Smith concludes that higher education needs to develop mentor programs and engage the graduate population on campus. A large problem faced in teaching millennials is their access to technology. Smart phones have become a gateway for information.

Seventy-eight percent of teens have a cellphone and 47 percent of those phones are smart phones. This is a 23 percent increase in the use of smart phones since 2011. In addition, 25 percent of teens are "cell-mostly" Internet users compared to adults, which is only 15 percent. This shows us a trend that more and more millennials are using smart phones as a means for Internet connection (Madden et al., 2013). Of this growing population, very few teens are using tools and applications that can help filter the mass amounts of information. This reveals that accessibility, knowledge, and repetition of habits build confidence in the digital space. Students are less likely to go online when they can find the information from a Google search on their smartphone.

In virtual learning environments, not all students behave as if they know the technology. Thirty-eight percent of students were not confident using virtual learning environments, 40 percent were not confident commenting on blogs, and 60 percent were not confident using video and audio software. Males were also more confident than females. The authors conclude that defining all students as digital natives is not fair because of disparities among minorities, the variation between technologies used, and lastly the age range (Jones et al., 2012).

### How are students and professors using digital learning environments and tools?

To understand today's classroom practices, it is crucial to understand digital learning environments. This can be defined as learning facilitated by technology that gives students some element of control over time, place, path and pace. A digital learning environment is not just a portal that students access. For students to benefit from the software it is essential to combine the technology with digital content and extra instruction for students who may require it. While teachers play a lesser role than in a traditional class, they serve as the guide and help ensure students stay on track and succeed. While these environments are becoming more common in education systems, 63 percent of students were comfortable using a learning management system while 28 percent of the population said they had never used one before (Kennedy et al., 2008).

A common digital learning environment is Blackboard. In my research I found that students were surveyed, given likert questions, and interviewed. Students said that the Blackboard learning management system is better suited for course announcements and for providing links to resources; however, 56 percent of students said Facebook was much better when students were asked about community building and facilitating class discussion (Buzzetto-More, 2012). A similar study recommends using the service only if there is a clear benefit to the student. Blackboard tools should only be presented to the students if it adds value to the page. Students require more direct feedback and collaboration and standard tools can limit this ability (McCabe & Meuter, 2011).

When looking at learning environments, there is a drastic difference in their use between students who take classes online versus face-to-face. Online students use technologies for mainly informative and educational purposes, while among the students in face-to-face universities, the predominant use of technologies is for leisure and communication (Gros et al., 2012). The reason students in online environments behave differently is because the teacher better prepares them to use this software. If the students have questions the professor can guide them to answers. It gives the student purpose for going online.

### In summary

Marc Prensky started the discussion of how educators should teach a new generation of students. While research supports there is not a wide gap between digital natives and digital immigrants, there is a difference in how the technology is used. Culture has played a predominant factor in how millennials view technology and their attitudes towards finding



information. As education attempts to cater to the needs of the next generation student, it is clear that educators should return to teaching students the skills they need to succeed rather than focusing on the differences between the generations. While learning environments are transitioning online, their implementation has not reached its fullest potential. The current result is a lack of scholastic confidence among an entire generation.

## **ARGUMENTS**

Online learning environments would better help students if they incorporated social media tools that encourage collaboration.

More and more classrooms are adopting the use of online learning environments. While there is great potential for building students' confidence through the mass array of Web 2.0 tools, the current state of these web environments are quite unsophisticated. Websites like Blackboard are well suited for providing students announcements and links to resources; however, discussion boards are not intuitive in fostering online communication and collaboration. This encourages students to shift their focus off their classwork and onto a social media site to complete the simple task of asking a question. As a result, information and focus is lost in the transition between homework and competing social information. To make online learning environments better, they need to incorporate social media tools that encourage collaboration.

When teaching students how to become self-regulated learners (SRL), who set and plan goals, monitor goal progress and reflect on their learning process, Twitter has become an instrument to transport the class outside of its traditional setting. In a study conducted by Kwangsu Cho, Sungkyunkwan University, and Moon-Heum Cho, Kent State University, two groups of students used Twitter as a social learning environment. A control group received no SRL training, and the experimental group was taught self-regulative thinking through Twitter. The study found that students in the experimental group exhibited SRL skills such as planning and reflecting more frequently than did students in the control group (2013). In addition, students in the self-regulative thinking group showed significant increase in perceived metacognition compared to the beginning of the semester, whereas no significant change was observed in the control group.

This research supports my claim because it demonstrates the benefits of social collaboration as a means for personal academic growth, increased communication skills and improved confidence when conducting coursework. By establishing social networks in an online learning environment, professors can provide students quick and easy communication and instruction. Instructors can demonstrate to students how to use social media as a means to expand their ability as a self-regulative thinker. Social websites like Twitter allow students to take what they are learning in class, and continue the conversation outside. The nature of social sites are much more informal and provide students a more engaging learning environment where they are not afraid to ask questions. In addition, the tools give the student a purpose for going online. Whether it is asking a

question, working on a project or having a private conversation, social tools keep students engaged at all times. The end result is increased knowledge and confidence in both classwork and the web.

As social media increases the amount of engagement with class material, students also receive higher grades. In a study of 125 students taking pre-health, an experimental group of 70 students used Twitter for academic and co-curricular instructions. By the end of the semester the results showed that the experimental group had a significantly greater increase in engagement than the control group, as well as higher semester grade point averages (Junco et al., 2010). By communicating using a social network both students and faculty were highly engaged in the learning process and in ways that went beyond what students expect in a traditional classroom activity.

As more and more research becomes available, it is becoming clear that social networks are helping students better engage in their work and as a result there is a positive impact on their grades. This research supports my claim because students perform better when instructors provide class related objectives and discussions through social network sites. The behaviors created through social network sites encourage students to explore and become active learners. By creating online learning communities students can openly talk with one another and help them build confidence in their work.

While social media sites help students engage in the material, they open the door for several issues that aren't faced in a traditional classroom. Eighty percent of surveyed professors reported that "lack of integrity of student submissions" is an "important" or "very important" barrier, and over 70 percent say privacy concerns are an "important" or "very important" barrier when adding social media into their class (Moran et al., 2011). Another issue that professors face is the time and effort required into keeping and maintaining a social network site. In addition, most education systems do not actively teach professors how to properly incorporate social media into their classroom. Without this education there is a negative perception associated with Facebook and Twitter, as they are not seen as having value for class. A large proportion of faculty says Facebook (53 percent) and Twitter (46 percent) have "negative" value for use in class.

Even though barriers do exist, professors do see the benefits of using social media. In the same study in the prior paragraph, 70 percent of the surveyed faculty agrees that video, podcasts, blogs, and wikis are valuable tools for teaching. In addition, 58 percent agree that social media can be valuable for collaborative learning. Only 12 percent of faculty disagreed with the statement (Moran et al., 2011). This data reveals that the issues concerning social media functionality in the classroom can be attributed to the lack of educational support from academic institutions. By providing educators knowledge on how to properly implement social media into the classroom, professors can protect their privacy while engaging with students. By using an online learning environment educators can also ensure the integrity of the student submitted work.

Ultimately, online learning environments should incorporate social media tools because it encourages social collaboration as a means for personal academic growth, increased

communication skills and improved confidence when conducting coursework. Research has found that students who use social media are more engaged in the class and as a result receive better grades.

Millennials are better served when professors act as facilitators of information and interact with students throughout the learning process.

As online classes become more common in higher education, their structure in the curriculum, and how professors deliver the content, is up for debate. In a traditional class setting students experience a teacher-centered approach to learning. In this scenario, which we are all accustomed to, the professor informs the student what they need to know in order to succeed in the class. In an online class setting, this pedagogy of teaching is seen much less as online courses continue to become learner-centered. With this in mind, the teacher is no longer fulfilling his or her traditional role. Instead of being a knowledge purveyor, he or she becomes a facilitator (Ng et al., 2007). This encourages students to be in control of his or her learning process. In a learner-centered approach there is a misassumption that the teacher student interaction is greatly reduced. While a student may not see the professor physically, it is essential for the professor to remain involved with the students' work.

In research compiled of interviews with students and faculty there is a trend that increased satisfaction in online courses is directly correlated to the quality and quantity of interactions. These interactions can either be from student-to-student, student-to-faculty or student-to-self. In a Shea, Fredericksen, Pickett, Plez, and Swan (2001) survey of 3,800 students enrolled in a select online class, the researchers concluded that the greater the percentage of the course grade that was based on discussion, the more satisfied the students were, the more they thought they learned from the course, and the more interaction they thought they had with the instructor and with their peers. At the end of the semester, the survey revealed the more students thought they learned from courses, the more satisfied they were with them. Students also thought the more perceived interaction in the class, the more they learned. In addition, the authors find that instructors who interact frequently and constructively with students, use a transparent interface, and value dynamic discussion have a significant contribution to the success of classes taken online.

This research exemplifies the benefits of learner-centered education and faculty interaction. As students explore the course material they are naturally inclined to ask questions. As students ask questions they become much more involved in the coursework than in a traditional teacher-centered lecture. The research above demonstrates that as a student interacts with the professor and classmates, there is a greater perception of knowledge gained and overall satisfaction in the class. When students have positive experiences with learning and technology, they are more likely to take classes that are typically perceived as more difficult. Ultimately, this helps the student build confidence in their work because they have the ability to control when and how they need help. By interacting with the professor the student is able to build a relationship which fuels interaction and overall satisfaction.



When constructing an online course it is crucial for the professor to take time and consider how to properly set up the course. In a cases study conducted by Ge, Yamashiro, and Lee (2000) found that when students are prepared prior to engagement in collaborative activity, there is a significant increase in the cognitive achievement of the participants. This allows students to have a clear understanding of what they need to accomplish and as a result can move forward with the assignment as the instructor facilitates its completion. This demonstrates that while professors no longer need to be the center of the learning process, it is still crucial for the faculty to properly assemble the online class in a way that allows the students to succeed as exploratory learners. A professor can structure online learning by creating an environment that nurtures collaborative activity, model the activity to provide a reference to students, guide the process to ensure it reaches the proper end goal and provide evaluation as the process continues (Palloff & Pratt, 2004). By taking these steps students can engage in a collaborative learning environment without the fear of failing to meet the proper end result.

This research supports my claim because it demonstrates the necessity of faculty involvement in collaborative learning online while also providing evidence that it is no longer the responsibility of the educator to be the center of the learning process. As more and more students use online learning environments, professors must create environments and activities where students can succeed and collaborate as self-guided learners. When a professor successfully sets the stage for collaboration, he or she can facilitate the knowledge gathered and provide evaluation for the students' work. Then end result of this process is increased knowledge gained through collaboration and thus an increase in student confidence in their ability to research and communicate.

While professors who facilitate and interact with students increase their knowledge and overall satisfaction, proponents of this style of learning argue that the research does not fairly examine individual students. Not every student needs a lot of interaction to perform well in a class. In a study of an English class, the class was divided into a highly interactive group, a moderate interactive group, and a low interactive group. After being given an exam the highly interactive group had a mean score of 85.6, the moderate had a mean score of 85.7, and the low had a mean score of 85 (Ng et al., 2007). This demonstrates that each student has different academic capabilities and may respond differently to interaction.

Even though every student approaches communication and online interaction differently, the positives of community building, creating relationships, and becoming learner-centered ultimately help students develop skills that have strong connections to skills needed in today's workplace. Currently, business leaders see a serious deficiency in oral, written, and interpersonal communication skills among millennials (Hartman & McCambridge, 2011). Working in collaborative online learning environments where a professor can facilitate the knowledge gained, provides students an opportunity to not only gain new perspective, but also learn how to work with others to reach an end goal.

In the end, professors play an essential role in creating environments where students can succeed online. It is crucial for faculty to interact with students and properly prepare them



for collaborative learning. The end result is an increase in student confidence, overall satisfaction with the course, and the willingness to try again in the future.

## **CONCLUSION**

In 2001, Marc Prensky declared millennials as digital natives and previous generations as digital immigrants. While it is well researched that the term digital native has no scientific backing, the distinction from Prensky's argument remains a highly debated topic in education to this date. As education has focused on how to better suit the next generation student, there is less focus on teaching the necessary skills millennials to succeed both in the classroom and the professional world. In today's culture, millennials are accustomed to having instant access to information and expect to find quick results. Without being taught the proper skills in higher education, millennial students are rapidly losing their confidence in their ability to filter information online.

Today more and more students are using digital learning environments to receive content for their classes. Unfortunately, the current state of these tools are unsophisticated and do not offer students the ability to participate in collaborative online experiences. To better serve the millennial student I argue that the digital learning environment and tools established by professors and institutions dictate a student's ability to confidently filter information in the digital space.

First, students have higher level of satisfaction; perceptions of knowledge gained and develop stronger communication skills when using social tools in the classroom. By incorporating social network tools into digital learning environments students can efficiently communicate and build a relationship with faculty and their peers. It allows students to engage in coursework outside of the classroom. Critics argue social media is not conducive for maintaining privacy and can compromise the integrity of a students work. By incorporating social tools into a learning environment, it is not forcing students or professors to use a third party like Facebook. This allows the social tools to be used strictly for class. As a result, this protects the integrity of the work as well as the privacy of the students and faculty.

Next, faculty must adopt a learner-centered teaching philosophy where he or she can facilitate a class. Knowing millennials are exploratory learners, it is crucial for professors to properly set up an environment conducive of collaborative learning. When students are prepared prior to engagement in collaborative activity, there is a significant increase in the cognitive achievement of the participants. This forces the student to take charge of what they learn while maintaining an informal environment where a student can ask questions and engage in conversation. This not only raises a student's confidence in their work, but also their overall satisfaction and knowledge gained in the course. While some argue that not all students benefit from collaborative learning, working in groups develop skills that are valuable in the professional workplace.

If social tools are implemented into digital learning environments, additional research will be required to assess the statistical validity of the arguments made in this paper.

Ultimately, higher education must adopt social tools into digital learning environments and educate professors how to properly facilitate and engage in class while creating a collaborative learning environment. This will help students regain confidence in the quality of information they find online and help them develop valuable skills that are necessary in the professional workplace.

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## Scope

The term digital native has been coined to define millennials (Presnky, 1991). Even though millennials have grown up with technology, the assumption that they are avid computer users that can easily filter information online is false. Eighty-four percent of undergraduates reported the most difficult step in the course-related research process was getting started (Head & Eisenber, 2010). In addition, 49 percent of the sample asked instructors for assistance in assessing the quality of sources for course work. This demonstrates the clear disconnect between millennials and their ability to confidently find scholarly information online.

Teachers identified that three most common areas students are very likely to conduct research are search engines, 94 percent, Wikipedia, 75 percent and social media at 52 percent (Purcell et al., 2012). This makes the Internet a place where research is easier to do well and easier to do poorly. For many college students, this is detrimental to finding quality research.

To solve this problem it is imperative to evaluate how millennials are using the Internet and the tools provided in a Web 2.0 landscape. College students also need an environment where they can use each other's knowledge to improve the quality of their research and critical thinking.

## Audience

The target audience for this project is the undergraduate students at Ball State University. This is a millennial population that faces the challenge of scholastic research on a daily basis. The group of students targeted will be Honors College students (25-50 students). The classes below list Honors courses offered in the Spring semester. Students were e-mailed from select courses and were formed into test groups for the project.

- Honors 201
- Honors 202
- Honors 203
- Honors Thesis

*\*At the end of the semester I came close to hitting my 25-student mark. In total I reached 22 students. Being at the end of the semester the use of this website was limited because most students already finished their major research and other academic projects. An issue to be discussed in the usability findings is the practicality of having a website that is connected to a digital learning environment.*

## Usability Goals

- Effectively find, develop, and research ideas amongst other students.
- Create an environment where students can efficiently communicate with each other.
- Provide a satisfactory experience that builds confidence in one's own scholastic research.

## **User Requirements**

- Collaborative spaces that individuals can use to invite people to share ideas, pose questions and brainstorm.
- Responsive site that can be viewed on multiple platforms.
- A multi-person blog, one that allows for various media on each post.
- Create multiple spaces that are both public and private.
- A notification tool that informs users when a question is posed
- Separate chat and posting tools.
- Simple and easy to understand navigation
- A comment rating system where users can build confidence

## **Usability Summary**

### **Design Alternatives**

At the beginning of the design process I created three different designs to determine which layout would most effectively meet the user requirements for the website. The first prototype (X) was created for content heavy consumers. Prototype Y was created in mind of a media first consumer. Lastly, Prototype Z was focused on the individual and thus highlighted those features. To test the usability of each layout I asked the users which design would best help them accomplish a user requirement. The user would say what prototype they preferred and listed why. During the testing I found that users preferred a user-centered design. I learned that my users want to know when their questions asked were answered and when their classmates posted a question. Users also wanted to know if people marked that they liked their responses. In the content heavy design alternatives, users liked that they could access everything from one page but disliked the overwhelming amount of information on the page. The media heavy alternative did appeal to visual learners but did do a good job separating public and private content. With this in mind I was able to create my paper prototype.

### **Paper Prototype**

After creating my first prototype I conducted a cognitive walkthrough with five potential users. Each user was given four tasks as I recorded notes on their behaviors. Each of the users tested fits the target audience I set for the project. By testing five users I was able to discover major and minor usability flaws in my initial design.

When users logged into the prototype the homepage was very overwhelming and information dense. This proved to be too cumbersome for users to understand because it took too long for them to digest the information in order to make key relationships among the websites tools. While I tried to take a very user-centric approach, most users ignored the personal information in favor of main navigation or content that was present in the sidebars. In addition, there were disconnects between what a user considered public and private. In my first task, I asked the users to make a private post. I did not tell the users that the class section was private. As a result, each user struggled and three completely failed the task. Many would try to make the private post in the public posting area and look for a private posting option. To address this, the question feed on the homepage now has a

location button so that users do not need to navigate to a private area to make a post in a specific class.

One of the key features of the website was the ability to make private classes. While each user was able to identify where they needed to go to create a class, few recognized that they needed to enter their classmates email addresses into the page in order for them to accept the invitation to the group. Many of the users enter in either their personal email or that of their professor. By adding labels and visual cues, users will know exactly what they need to enter to succeed.

When I tasked students to comment on a classmate's question, many users were able to navigate to the class page; however, the language used in the prototype confused each user. In the original paper prototype, I termed the question area as a blog for advice. When talking to each of my users, I quickly realized that users want to see a feed where they can quickly find questions, and a separate area where they can find advice.

My last task had users find a question they posed and mark on the site that they liked the response. Through testing this I learned that most users went to the profile page to search for this information. In the original design, the profile page presented no information that couldn't be found on other pages. It lacked the user's personal feed, and answer stream. When users marked that they liked the post they were to hit a plus button. Next to this button was a minus originally intended to help prevent negative posts. What I learned from testing users was the negative self-awareness the button created. Each user noted that if they received negative feedback, they would be afraid to make posts. This defeats the entire purpose of the web application: building millennials confidence.

## **Digital Prototype**

After building the digital prototype I tested five different users. The five users were given the same tasks as the users who participated in the paper prototype. Taking advantage of the recommendations of users that were generated from the first round of testing, the second cognitive walkthrough went much smoother for the users. After condensing the home page because of its information density, I found that users preferred the simpler look but the page still lacked a place where users can make a post. This is a key function of the site and I currently force users to go to a different page to access it. This is an issue I hope to address by moving a feed to the main page. Another issue of the digital prototype is its lack of uniform language and instructions. When I created the prototype I used the word classes to identify private groups. In BuddyPress, the act of creating a class is labeled groups. This confused three of the five users because they were not sure if creating a group was the same as creating a class.

A major issue I also found in the digital prototype is the location of the profile page and the lack of streamlined notifications. As a user of this web app, it is crucial to know the minute I receive a notification. Currently, notifications are tucked away on the profile page, which is hard to find to begin with. The login area is a widget and not a page on the site. While the widget is on every page, it is not easily recognized. Another instance of confusion was generated in the create a class section. Users are asked to write a description of the class; however there is no instruction. The users wanted to know what specifically they should enter into the website.

## **Final Usability Test**

Learning from the past usability test, I was able to correct the different jargon used on the site. This is most evident in creating a group. Originally creating a group was called create a class; however, the tools BuddyPress uses automatically labeled the function as groups. By correcting this language users will not be confused in their actions. Other changes I would like to make were out of my technical ability or required the purchasing of plug-ins. In my final wave of usability testing I tested five additional users. Many of the former's issues were mentioned in the final usability test. Users want to be able to post directly from the main page rather than go to a secondary page. In addition, users felt that the location of the sign-in and notifications needs to be re-worked. BuddyPress has these features as plugins but the location available for it is not common in other social websites. Instead of having profile log in and notifications along the top of the page, it has to be located on the right side bar. New issues encountered in the final wave of testing include an error when users were trying to find their password. The website was not working properly and I was not sure of an immediate solution. A large issue I have found is that users were not keen in having another website to visit, especially when it comes to academics. I learned that users would much prefer this functionality to be tied into Blackboard.

## **Works Cited**

- Head, A. J., & Eisenberg, M. B. (2010). Truth Be Told: How College Students Evaluate and Use Information in the Digital Age. Project Information Literacy Progress Report. Project Information Literacy.
- Purcell, K., Rainie, L., Heaps, A., Buchanan, J., Friedrich, L., Jacklin, A., ... & Zickuhr, K. (2012). How Teens Do Research in the Digital World. Pew Internet & American Life Project.
- Prensky, M. (2001). Digital natives, digital immigrants part 1. On the horizon,9(5), 1-6.



# **Appendix I**

## **Final Prototype**





ask



engage



learn

## Class List

[Inactive](#) **Active** [Page 1 / 2](#)



Magazine Design  
active 1 day, 1 hour  
ago



Handwritten Caption  
active 2 days, 1 hour  
ago



ICOM 455  
active 2 days, 20 hours  
ago

## Recently Active Members

## About

The term digital native has been coined to define millennials (Presnky, 1991). Even though millennials have grown up with technology, the assumption that they are avid computer users that can easily filter information online is false. 84 percent of undergraduates reported the most difficult step in the course-related research process was getting started (Head & Eisenber, 2010). In addition, 49 percent of the sample asked instructors for assistance in assessing the quality of sources for course work. This demonstrates the clear disconnect between millennials and their ability to confidently find scholarly information online.

[Edit](#) [Edit with Visual Composer](#)

## Leave a Reply

Logged in as [rwwlaranowski](#) [Log Out](#)

## Log In



[Peter L Laranowski](#)  
[Log Out](#)

## Recent Comments

## Quick Chat

[rwwlaranowski](#)

## Class




zwwiatkowski  
[Edit Profile](#) [Log Out](#)


Search Groups...

Search

All Groups 

My Groups 

[Create a Group](#)

Order By: **Last Active** 

Viewing 1 - 3 of 3 groups



**Magazine Design**

active 1 day, 1 hour ago

Create a 36-page magazine and media kit over the course of the semester, M-W 5:00-6:15

Private Group / 1 member



**Honors Capstone**

active 2 days, 1 hour ago

A group created to discuss with senior Honor's students about the work they are doing to complete their thesis

Public Group / 2 members



**ICOM 495**

active 2 days, 20 hours ago

Senior Capstone taught by Brad King at Ball State University

[Leave Group](#)

Private Group / 2 members

Viewing 1 - 3 of 3 groups

## Recently Active Members



## Members

[All Members](#)[My Friends](#)

Viewing 1 - 2 of 2 active members



**Ryan Wagner**  
active 1 day, 1 hour ago



**Chadwick B. Jones**  
active 2 days, 1 hour ago

Viewing 1 - 2 of 2 active members

Search Members...

Search

Order By: **Last Active**

Cancel Friendship

Cancel Friendship

## Class List

[Newest](#) **Active** [Most Liked](#)



**Maguima Fienon**  
active 1 day, 1 hour ago



**Romane Calmiche**  
active 2 days, 1 hour ago



**M. B. B. B.**  
active 2 days, 26 hours ago

## Chat

**rwliaranowski**

## Site-Wide Activity

What's new, rwwlaranowsk?

Post in:

[Post Update](#)

[All Members](#) [My Friends](#) [My Groups](#) [Mentions](#) [RSS](#)

Show:



Chadwick Hughes changed their profile picture 2 days, 1 hour ago

[Comment](#) [0](#) [Favorite](#) [Delete](#)



Chadwick Hughes posted an update in the group [Hunters Can Walk](#) 2 days, 1 hour ago  
Anyone finding it hard to dedicate a lot of time to this?

[Comment](#) [0](#) [Favorite](#) [Delete](#)



Chadwick Hughes joined the group [Hunters Can Walk](#) 2 days, 1 hour ago

[Comment](#) [0](#) [Favorite](#) [Delete](#)



Chadwick Hughes and [rwwlaranowsk](#) are now friends 2 days, 1 hour ago

[Comment](#) [0](#) [Favorite](#) [Delete](#)



Chadwick Hughes became a registered member 2 days, 2 hours ago

[Comment](#) [0](#) [Favorite](#) [Delete](#)



Ryan became a registered member 2 days, 15 hours ago

[Comment](#) [0](#) [Favorite](#) [Delete](#)

## Profile



[rwwlaranowsk](#)  
[Log Out](#)

## Groups

[New](#) [Active](#) [Popular](#)



[Magazine Design](#)  
active 1 day, 1 hour ago



[Hunters Can Walk](#)  
active 2 days, 1 hour ago



[HGM 455](#)  
active 2 days, 20 hours ago

## Who's Online



## Chat

[rwwlaranowsk](#)



## Honors Capstone

Private Group active 10 seconds ago

A group created to discuss with senior Honors students about the work they are doing to complete their thesis.

Group Admins



Chat

rwmlaranowsk

Home



RSS

Show: Everything

What's new in Honors Capstone, rwmlaranowsk?

Post Update



Chadwick Hughes posted an update in the group 2 days, 2 hours ago

Anyone finding it hard to dedicate a lot of time to this?

Comment 0 Favorite Delete



Chadwick Hughes joined the group 2 days, 2 hours ago

Comment 0 Favorite Delete



Penelope Mousa posted an update in the group 2 days, 20 hours ago

It's getting close to the end of the semester. How is everyone doing?

Comment 2 Favorite Delete



Chadwick Hughes replied 2 days, 2 hours ago

On my third cup of coffee.

Share

Powered by Oolite Chat